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SOME RESULTS OF A STUDY OF THE CROP TREE METHOD OF TIMBER STAND IMPROVEMENT [7.321]

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In 1933 the CCC began timber stand improvement work on southern Appalachian national forests. The recommendations published in "Measures for stand improvement in southern Appalachian forests" (E.C.W. Forestry Publication No. 1) which were based on the best information available at the time were followed in the selection and release of crop trees. In order to determine how well the methods used had worked out, a study was made 5 years after the treatment, of 28 sample areas distributed from West Virginia to Georgia. The study, a complete report of which is in progress of publication, was confined to young stands (15 to 40 years old) and did not cover the effect of timber stand improvement on the abundance of game food. The following suggestions, based on the findings of the study, include restatements of techniques which proved to be adequate, and substitutions for those which were shown to be ineffectual. They apply to young stands where timber production is the major consideration.

The amount of release given to crop trees by the CCC crews produced satisfactory results. This amount of release can be approximately duplicated by use of the following rule: Think of the vegetation around a crop tree as belonging to three classes, (1) trees taller than the crop tree, (2) trees shorter than the crop tree but with tops reaching one-third of the way up the crown of the crop tree, and (3) trees or shrubs so short that they do not reach one-third of the way up the crown of the crop tree. Cut all trees in class (1) which are within 4 feet of lines drawn vertically upwards from the outer edge of the crown of the crop tree; and cut all trees in class (2) which are within 2 feet of the outer edge of the crown of the crop tree. Cut no trees or shrubs in class (3). This method gives the crop tree complete illumination from above, provides some light to the sides of the crown, and shades the trunk so that water sprouts are not formed and self-pruning is encouraged.

It was found that yellow poplar and chestnut oak crop trees taller than 5 feet, shortleaf and white pine crop trees taller than 10 feet, and white oak crop trees taller than about 15 feet are able to keep ahead of competing trees after treatment. A second treatment at the end of 5 or 10 years may be needed on areas where shorter crop trees must be selected.

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Slow growing trees are more apt to produce water sprouts when released than fast growing trees of the same species. This is especially true of white oak and yellow poplar. If slow growing crop trees must be selected they should be left with their stems shaded to avoid water sprouts.

If a crop tree is one of a clump of sprouts, the removal of the other sprouts in the clump will not increase the growth of the chosen stem, and so they should not be cut unless they are seriously interfering with the crown of the crop tree. Single stemmed crop trees are, of course, always to be preferred, when obtainable, to those in sprout clumps.

In certain species a lesser percentage of small trees (6 inches in diameter and smaller) sprout when girdled than when felled, but the cost of girdling small trees is greater than the cost of felling them, and the advantage gained is not great. Vigor of sprouts, as measured by height growth, is unaffected by method of treatment (i.e. felling or girdling). It is recommended that trees less than 6 inches in diameter be felled, and larger trees girdled.

Sprouts from stems cut part way through and then bent over were found to form clumps as high and wide as the clumps from stems completely cut off. It is easier and quicker to cut a stem completely, and therefore complete severance is recommended.

When some of the stems in a clump of sprouts are cut and some left uncut, new sprouts from the cut stems will be as vigorous as though all the stems of the clump had been cut. Therefore, leaving uncut part of a sprout clump as a means of reducing sprouting from the cut part is not recommended.

Two-thirds of all girdled beech trees were alive 5 years after treatment. Therefore, if it is essential that their shade be removed immediately, beech trees should be felled.

Trees with partly healed scars at girdling height frequently failed to die when girdled because the girdles were not perfect over the scars. Special care should be used in girdling such trees.

The cutting of vines 5 years ago kept more than half of them from again threatening crop trees. Therefore the cutting of vines is recommended as worthwhile.